

## CLAIMS

I claim:

1. A computer implemented system for aggregating and segmenting probabilistic distributions in real time comprising the steps of:
  - an input device for creating a target profile from the input of one or more users using stated preferences or expectations relative to data about which probabilistic distributions exist;
  - a computer program for simulating the future behavior of the target profile or comparative profiles with historical data;
  - a second computer program for identifying substitute profiles that match or improve upon the target profile or comparative profiles;
  - a third computer program for modifying a target profile or comparative profiles by selectively adding, eliminating, or changing particular probabilistic distribution characteristics in response to user-defined parameters or movements of an interactive user operated control;
  - a fourth computer program for codifying any discrepancies between a target profile and comparative profiles;
  - a fifth computer program for sensing and tracking single or multiple probabilistic distributions;
  - a sixth computer program for sensing and tracking multiple segments of a single aggregate probabilistic distribution; and

a display for generating results in a continual manner so that immediate feedback is displayed to the user as a discrepancy indicator.

2. The system according to claim 1 wherein said profiles are comprised of a set of securities.
3. The system according to claim 1 wherein said profiles are comprised of a market index.
4. The system according to claim 1 wherein said profiles are comprised of a proprietary index.
5. The system according to claim 1 wherein said profiles are an amalgamation of securities, market indexes, or proprietary indexes.
6. The system according to claim 1 wherein said parameters include tax considerations.
7. The system according to claim 1 wherein said parameters include regulatory or compliance considerations.
8. The system according to claim 1 wherein said parameters include derivative products or strategies.

9. The system of claim 1, wherein the step of codifying any discrepancies between a target profile and a comparative profile further comprises the step of calculating such discrepancies according to the following formula:

$$\text{EQU1 Discrepancy} = |E[X_{\text{Target}}] - E[X_{\text{Comparative}}]| / (\text{Var}[X_{\text{Target}}])^{0.5},$$

where respective values are weighted per user specifications and where the sum of weights is required to total one hundred percent.

10. The system of claim 1, wherein the step of codifying any discrepancies between a target profile and a comparative profile further comprises the step of computing color displays according to the result of EQU1 whereby a value less than or equal to 1.00 is coded green, a value greater than 1.00 but less than or equal to 2.01 is coded yellow, and a value greater than 2.01 is coded red.

11. The system of claim 1, wherein the step of codifying any discrepancies between a target profile and a comparative profile so that immediate feedback is displayed in response to movements of said interactive user operated control, further comprises the step of using said interactive user operated control as an input specifier and an output display.

12. The system of claim 1, wherein the step of aggregating marginal probability distributions into a single probabilistic distribution, or combining multiple aggregated probabilistic distributions, is defined by the following formula:

$$\text{EQU2 } P_{x_1, \dots, x_k}(t_1, \dots, t_k) = \sum_{(x_1, \dots, x_k)} f_{x_1, \dots, x_k}(x_1, \dots, x_k) t_1^{x_1} \dots t_k^{x_k}.$$

13. The system of claim 1, wherein the step of isolating a segment of an aggregated probabilistic distribution, called a marginal probability distribution, is defined by the following formula:

$$\text{EQU3 } P_{x_j}(t_j) = P_{x_1, \dots, x_j, \dots, x_k}(1, \dots, 1, t_j, 1, \dots, 1).$$

14. The system of claim 9, further comprising the step of using said interactive user operated control to achieve alternative results that match or improve upon the target profile.

15. The system of claim 14, further comprising the step of using said interactive user operated control to achieve alternative results that differ from or are something less than the target profile.

16. The system of claim 14, further comprising the step of using said interactive user operated control to achieve a result over a specified investment horizon.

17. The system of claim 14, further comprising the step of using said interactive user operated control to achieve a result managed for a set of personal financial data.

18. The system of claim 1, further comprising the step of using graphical user interface elements to represent discrepancies between a target profile and a comparative profile as part of the interactive user operated control.

19. The system of claim 18, further comprising the step of associating a first graphical user interface element to represent the target profile.

20. The system of claim 18, further comprising the step of associating a second graphical user interface element to represent the comparative profile.

21. The system of claim 18, further comprising the step of associating colors with a graphical interface element to represent subjective comfort levels.

22. The system of claim 18, further comprising the step of computing and displaying discrepancies in real time as the user manipulates the data.

23. The system according to claim 1 wherein said probabilistic distributions relate to combining expert financial expectations on the expected performance of a particular stock or other financial or economic variable interest.

24. The system of claim 23, further comprising the step of aggregating said expert expectations using EQU1 and if required EQU4 defined as:

$$\text{EQU4 } \rho_s (\text{Var } [X_i])^{0.5} (\text{Var } [X_j])^{0.5}.$$

25. The system according to claim 1 wherein said probabilistic distributions relate to combining expert medical opinions on the expected outcome of a particular drug or procedure.

26. The system of claim 25, further comprising the step of aggregating said expert expectations using EQU1 and if required EQU4.

27. The system according to claim 1 wherein said probabilistic distributions relate to contributory factors affecting the aggregate variability of differences between a carrier's (transporter of people or goods) actual and target arrival times.

28. A computer implemented method and apparatus for aggregating and segmenting probabilistic distributions in real time, comprising the steps of:

- creating a target profile from the input of one or more users using stated preferences or expectations relative to data about which probabilistic distributions exist;

- simulating the future behavior of the target profile with historical data;

- identifying substitute profiles that match or improve upon the target profile;

- modifying a target profile by selectively adding, eliminating, or changing particular probabilistic distribution characteristics in response to user-defined parameters or movements of an interactive user operated control; and

- codifying any discrepancies between a target profile and a comparative profile.

29. The method according to claim 28 wherein said profiles are comprised of a set of securities.

30. The method according to claim 28 wherein said profiles are comprised of a market index.

31. The method according to claim 28 wherein said profiles are comprised of a proprietary index.

32. The method according to claim 28 wherein said profiles are an amalgamation of securities, market indexes, or proprietary indexes.

33. The method according to claim 28 wherein said parameters include tax considerations.

34. The method according to claim 28 wherein said parameters include regulatory or compliance considerations.

35. The method according to claim 28 wherein said parameters include derivative products or strategies.

36. The method of claim 28, wherein the step of codifying any discrepancies between a target profile and a comparative profile further comprises the step of calculating such discrepancies according to the following formula:

$$\text{EQU1 Discrepancy} = |E[X_{\text{Target}}] - E[X_{\text{Comparative}}]| / (\text{Var}[X_{\text{Target}}])^{0.5},$$

where respective values are weighted per user specifications and where the sum of weights is required to total one hundred percent.

37. The method of claim 28, wherein the step of codifying any discrepancies between a target profile and a comparative profile further comprises the step of computing color displays according to the result of EQU1 whereby a value less than or equal to 1.00 is coded green, a value greater than 1.00 but less than or equal to 2.01 is coded yellow, and a value greater than 2.01 is coded red.

38. The method of claim 28, wherein the step of codifying any discrepancies between a target profile and a comparative profile so that immediate feedback is displayed in response to movements of said interactive user operated control, further comprises the step of using said interactive user operated control as an input specifier and an output display.

39. The method of claim 28, wherein the step of aggregating marginal probability distributions into a single probabilistic distribution, or combining multiple aggregated probabilistic distributions, is defined by the following formula:



$$\text{EQU2 } P_{x_1, \dots, x_k}(t_1, \dots, t_k) = \sum_{(x_1, \dots, x_k)} f_{x_1, \dots, x_k}(x_1, \dots, x_k) t_1^{x_1} \dots t_k^{x_k}.$$

40. The method of claim 28, wherein the step of isolating a segment of an aggregated probabilistic distribution, called a marginal probability distribution, is defined by the following formula:

$$\text{EQU3 } P_{x_j}(t_j) = P_{x_1, \dots, x_j, \dots, x_k}(1, \dots, 1, t_j, 1, \dots, 1).$$

41. The method of claim 36, further comprising the step of using said interactive user operated control to achieve alternative results that match or improve upon the target profile.

42. The method of claim 41, further comprising the step of using said interactive user operated control to achieve alternative results that differ from or are something less than the target profile.

43. The method of claim 41, further comprising the step of using said interactive user operated control to achieve a result over a specified investment horizon.

44. The method of claim 41, further comprising the step of using said interactive user operated control to achieve a result managed for a set of personal financial data.

45. The method of claim 28, further comprising the step of using graphical user interface elements to represent discrepancies between a target profile and a comparative profile as part of the interactive user operated control.

46. The method of claim 45, further comprising the step of associating a first graphical user interface element to represent the target profile.

47. The method of claim 45, further comprising the step of associating a second graphical user interface element to represent the comparative profile.

48. The method of claim 45, further comprising the step of associating colors with a graphical interface element to represent subjective comfort levels.

49. The method of claim 45, further comprising the step of computing and displaying discrepancies in real time as the user manipulates the data.

50. The method according to claim 28 wherein said parameters may be used in conjunction with a linear programming tool to create comparative portfolios.

51. A computer readable medium, said computer readable medium having computer application software stored thereon, said application software being configured to permit a real time aggregation and segmentation of probabilistic distributions based on input parameters relating to financial securities and strategies, wherein the evaluation of said

probabilistic distributions may be performed in the context of identifying comparative portfolios or evaluating implications of tax and regulatory constraints.

52. The method according to claim 28 wherein said probabilistic distributions relate to combining expert financial expectations on the expected performance of a particular stock or other financial or economic variable interest.

53. The method of claim 52, further comprising the step of aggregating said expert expectations using EQU1 and if required EQU4 defined as:

$$\text{EQU4} \quad \rho_s (\text{Var} [X_i])^{0.5} (\text{Var} [X_j])^{0.5}.$$

54. The method according to claim 28 wherein said probabilistic distributions relate to combining expert medical opinions on the expected outcome of a particular drug or procedure.

55. The method of claim 54, further comprising the step of aggregating said expert expectations using EQU1 and if required EQU4.

56. The method according to claim 28 wherein said probabilistic distributions relate to contributory factors affecting the aggregate variability of differences between a carrier's (transporter of people or goods) actual and target arrival times.